



Emergency Contact: Chemtrec (800) 424-9300
Or Norco (208) 336-1643

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Chlorodifluoromethane in Air 0.0002% to 2.0%

MATERIAL SAFETY DATA SHEET

Identification

Product Name: Chlorodifluoromethane in Air 0.0002% to 2.0%

Revision Date: 04/10/13

Chemical Name: Chlorodifluoromethane in Air

Last Review Date: 04/10/13

Chemical Family: Gas Mixture

CAS Number: N/A

Common Names/Synonyms: Fluorocarbon 22 in Air, Halocarbon 22 in Air, HCFC 22 in Air

MSDS Identification Code/Number: 3170

Composition, Information on Ingredients, Exposure Limits

Exposure Limits¹

Ingredient	% Volume	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Chlorodifluoromethane Formula: CHClF ₂ CAS: 75-45-6 RTECS#: PA6390000	0.0002 to 2.0%	Not Available	1000 PPM TWA	LC ₅₀ : 350,000 PPM inhalation/rat (15 min)
Air Formula: N/A CAS: N/A RTECS#: N/A	98.0 to 99.9998%	Not Applicable	Not Applicable	Not Applicable

¹ Refer to individual state or provincial regulations, as applicable, for limits that may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 2007 Threshold Limit Values for Chemical Substances and Physical Agents

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

Hazards Identification

Emergency Overview:

Colorless, odorless, nonflammable gas. This product contains sufficient oxygen to support life. Chlorofluorocarbons can cause irritation, central nervous system depression and irregular heart beat at high concentrations. Nonflammable but decomposes to toxic gases, including phosgene, under fire conditions. Use only with adequate ventilation. Contents under pressure. Use and store below 125°F (52°C).

Route of Entry:

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion
No	No	No	Yes	No

Health Effects:

Exposure Limits Yes	Irritant No	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen No
Synergistic Effects None reported		

Hazards Identification Continued

Carcinogenicity: NTP: No IARC: No OSHA: No

Eye Effects:

Contact with rapidly expanding gas near the point of release may cause frostbite.

Skin Effects:

Contact with rapidly expanding gas near the point of release may cause frostbite with redness, skin color change to gray or white, and blistering.

Ingestion Effects:

None known. Ingestion is unlikely as product is a gas at room temperature.

Inhalation Effects:

Gas mixture contains sufficient oxygen to support life (at least 98% air is present). Chlorodifluoromethane acts as a simple asphyxiant, but is not present at high enough concentrations to exclude oxygen.

Medical Conditions Aggravated by Exposure: None known.

NFPA Hazard Codes

Health: 1
 Flammability: 0
 Instability: 0

HMIS Hazard Codes

Health: 1
 Flammability: 0
 Physical Hazard 3

Ratings System

0: No Hazard
 1: Slight Hazard
 2: Moderate Hazard
 3: Serious Hazard
 4: Severe Hazard

Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2009, *CGA Recommended Hazard Ratings for Compressed Gases, 3rd Edition*.

First Aid Measures

Eyes:

None required for gas. If frostbite is suspected, flush eyes with cool water for 15 minutes and obtain immediate medical attention.

Skin:

None required for gas. For frostbite, immerse skin in lukewarm water. DO NOT USE HOT WATER. Obtain medical attention.

Ingestion:

None required. Product is a gas at normal temperatures and conditions.

Inhalation:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS. Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, and if breathing has stopped, administer artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Fire Fighting Measures

Conditions of Flammability: Not flammable		
Flash Point: Not Available	Method: Not Available	Autoignition Temperature: Not Available
LEL % None	UEL % None	
Hazardous Combustion Products: None. Chlorofluorocarbons decompose to toxic gases at fire temperatures.		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

Fire Fighting Measures Continued

Fire and Explosion Hazards:

Nonflammable. May decompose yielding toxic products, which may include phosgene, hydrochloric and hydrofluoric acids. Cylinder may rupture violently from pressure when involved in a fire situation.

Extinguishing Media:

None required. Use as appropriate for surrounding materials.

Fire Fighting Instructions:

If possible, stop the flow of gas supply. Use water spray to cool adjacent cylinders and areas. Fire fighters should wear a full-face piece NIOSH/MSHA approved self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout gear.

Accidental Release Measures

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or valve, contact the appropriate emergency telephone number listed in section 1 or call your closest Norco/NorLab location.

Handling and Storage

Electrical Classification:

Non-hazardous

Gas mixture is non-corrosive and may be used with any common structural material.

Use only in well-ventilated areas. Valve protection caps must remain in place unless the cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure (<3000 PSIG) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous backflow into the cylinder.

Protect cylinders from physical damage. Store in cool, dry, well ventilated area of non-combustible construction away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in – first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1, P-9, and Safety Bulletin SB-2.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

Exposure Controls, Personal Protection

Engineering Controls:

Local exhaust used in combination with general ventilation as necessary to maintain air contaminants at or below acceptable exposure guidelines.

Eye/Face Protection:

Safety goggles or glasses as appropriate for the job.

Skin Protection:

Protective gloves appropriate for the job.

Exposure Controls, Personal Protection Continued

Respiratory Protection:

Positive pressure air line with full-face mask and escape bottle or self-contained breathing apparatus should be available for emergency use.

Other/General Protection:

Safety shoes.

Physical and Chemical Properties

Parameter	Value	Units
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Not Available	
Vapor density (Air = 1)	: Not Available	
Evaporation point	: Not Available	
Boiling point	: Not Available	
Freezing point	: Not Available	
pH	: Not Applicable	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Negligible	
Odor threshold	: Not Applicable	
Odor and appearance	: Colorless, odorless gas.	

Stability and Reactivity

Stability:

Stable

Incompatible Materials:

Chlorodifluoromethane may react violently with chemically active metals such as sodium, potassium, barium, powdered magnesium, powdered aluminum and organometallics.

Hazardous Decomposition Products:

Chlorodifluoromethane decomposes at fire temperatures to hydrochloric and hydrofluoric acids, carbonyl fluoride and phosgene.

Hazardous Polymerization:

Does not occur.

Toxicological Information

Reproductive/Mutagenic:

Exposure of male rats to 50,000 ppm Chlorodifluoromethane for 5 hours adversely affected the reproductive system. Mutations were produced in a bacterial (S. Typhimurium) assay system at 330,000 ppm.

Chronic:

There is currently no known adverse health effects associated with chronic exposure to this gas.

Ecological Information

The gas will be dissipated rapidly in well-ventilated areas. Chlorodifluoromethane is a chlorofluorocarbon (CFC) compound. Chlorofluorocarbon compounds have been implicated in the possible depletion of the stratospheric ozone, via a series of complex chemical reactions which occur in the upper atmosphere. Atmospheric ozone is essential in protecting plants and animals from potentially harmful ultraviolet-light exposures. All work practice must be directed at eliminating environmental contamination.

No evidence is currently available on this product's effects on plant and animal life.

No evidence is currently available on this product's effects pm aquatic life.

Disposal Considerations

Do not attempt to dispose of waste or unused quantities in returnable cylinders. Return in the shipping container, properly labeled, with any valve outlet plugs or caps secure and valve protection cap in place, to Norco or NorLab for proper disposal. Non-refillable containers should be vented in a well-ventilated area then disposed of in accordance with local regulations, or returned to NorLab.

Transport Information

Parameter	United States DOT	Canada TDG
Proper Shipping Name:	Compressed gases, N.O.S., (Chlorodifluoromethane, Nitrogen)	Compressed gases, N.O. S.
Hazard Class:	2.2	2.2
Identification Number:	UN 1956	UN 1956
Shipping Label:	Non-flammable Gas	Non-flammable Gas

Regulatory Information

SARA Title III Notifications and Information:

Chlorodifluoromethane is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know act (EPCRA) of 1986 and of 40 CFR 372.

SARA Title III – Hazard Classes:

- Acute Health Hazard
- Sudden Release of Pressure Hazard

Chlorodifluoromethane is subject to the reporting requirements under Title VI of the Clean Air Act Amendments of 1990: "Stratospheric Ozone Protection".

Chlorodifluoromethane is listed as a Class II ozone-depleting chemical. This product may be required to bear the following label:

Warning: Contains Chlorodifluoromethane, a substance which harms public health and environment by destroying ozone in the upper atmosphere.

Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

Disclaimer of Expressed and Implied Warranties:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).